

1081.106



PATENT SPECIFICATION

NO DRAWINGS

1081.10

Date of Application and filing Complete Specification: Nov. 5, 1964.
No. 45178/64.

Application made in United States of America (No. 331390) on Dec. 18, 1964.
Complete Specification Published: Aug. 31, 1967.

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PATENTS ACT, 1949

SPECIFICATION NO. 1,081,106

The following corrections were allowed under Section 76 on 28th October 1967:

Page 2, line 29, for "chlorophyllin" read "chlorophyllin"

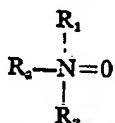
Page 3, lines 11, 28, 87, 103, 112 and 115, for "lauroyl" read "lauryl"

Page 3, lines 44 and 68, after "mixture" insert "of"

THE PATENT OFFICE,
21st December 1967

2 994

- 15 water-insoluble polishing agent, an anionic detergent and a compound having the general formula:



- 20 wherein R_1 and R_2 are methyl groups and R_3 is an alkyl radical having a carbon chain containing from 10 to 18 carbon atoms, the amount of the said compound being in the range 0.1 to 5% by weight of the preparation and sufficient to inhibit odour in saliva.

- 25 Specific amine oxides which provide improved products when incorporated into dental preparations include dodecyl dimethylamine oxide, cetyl dimethylamine oxide, myristyl dimethylamine oxide and mixtures thereof, such as a mixture of myristyl and dodecyl dimethylamine oxides. A preferred mixture of oxides is a mixture of alkyl dimethylamine oxides wherein the distribution of chain lengths of the alkyl groups is
- 30 approximately as follows: C_{10} —3.2%, C_{12} —54.9%, C_{14} —32.2%, C_{16} —9.2% and C_{18} —0.4%.

- 35 The oxides of the above general formula possess properties which are particularly advantageous in dental preparations. Especially

[F 1.]

dentifrices, lozenges or tablets. Dental preparations may contain various adjuvant materials in suitable amounts provided these do not substantially adversely affect the desired results.

Any suitable water-insoluble polishing agent may be admixed with the oxides in the preparation of dentifrice compositions such as tooth powders, pastes and creams. Representative polishing materials include dicalcium phosphate, tricalcium phosphate, insoluble sodium metaphosphate, aluminium hydroxide, magnesium carbonate, calcium sulphate, bentonite and mixtures thereof. It is preferred to use the water-insoluble calcium or magnesium salts as the polishing agents and, more particularly, calcium carbonate and/or a calcium phosphate, such as dicalcium phosphate dihydrate. In general, these polishing agents will comprise a major proportion by weight of the solid ingredients. The polishing agent content is variable, but will generally be up to 95% by weight of the total composition. In the case of a dental cream, such polishing agents will generally comprise from 20% to 75%, preferably 45% to 55%, whereas in tooth powders the polishing agents will usually be in greater proportion, such as from 70% to 95%.

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Index at acceptance: —A5 B32

Int. Cl.: —A 61 h 7/16

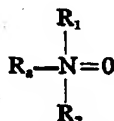
COMPLETE SPECIFICATION

Dental Preparations Containing Amine Oxides

We, COLGATE-PALMOLIVE COMPANY, a Corporation organised and existing under the Laws of the State of Delaware, United States of America, of 300 Park Avenue, New York, New York 1022, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to dental preparations.

A dental preparation according to the invention comprises a compatible mixture of a water-insoluble polishing agent, an anionic detergent and a compound having the general formula:



wherein R_1 and R_2 are methyl groups and R_2 is an alkyl radical having a carbon chain containing from 10 to 18 carbon atoms, the amount of the said compound being in the range 0.1 to 5% by weight of the preparation and sufficient to inhibit odour in saliva.

Specific amine oxides which provide improved products when incorporated into dental preparations include dodecyl dimethylamine oxide, ceryl dimethylamine oxide, myristyl dimethylamine oxide and mixtures thereof, such as a mixture of myristyl and dodecyl dimethylamine oxides. A preferred mixture of oxides is a mixture of alkyl dimethylamine oxides wherein the distribution of chain lengths of the alkyl groups is approximately as follows: C_{10} —3.2%, C_{12} —54.9%, C_{14} —32.2%, C_{16} —9.2% and C_{18} —0.4%.

The oxides of the above general formula possess properties which are particularly advantageous in dental preparations. Espe-

cially notable is their ability to inhibit odour in saliva, even in the presence of anionic detergents which are commonly used in dental preparations and which have been found in some cases to impair the efficiency of other odour inhibiting additives.

The oxides may be utilized in any preparations comprising a compatible mixture of a water-insoluble polishing agent and an anionic detergent and designed for application to the oral cavity, which preparations are referred to herein as dental preparations. Such dental preparations include toothpastes and dental creams, tooth powders, liquid dentifrices, lozenges or tablets. These preparations may contain various adjuvant materials in suitable amounts provided these do not substantially adversely affect the desired results.

Any suitable water-insoluble polishing agent may be admixed with the oxides in the preparation of dentifrice compositions such as tooth powders, pastes and creams. Representative polishing materials include dicalcium phosphate, tricalcium phosphate, insoluble sodium metaphosphate, aluminium hydroxide, magnesium carbonate, calcium sulphate, bentonite and mixtures thereof. It is preferred to use the water-insoluble calcium or magnesium salts as the polishing agents and, more particularly, calcium carbonate and/or a calcium phosphate, such as dicalcium phosphate dihydrate. In general, these polishing agents will comprise a major proportion by weight of the solid ingredients. The polishing agent content is variable, but will generally be up to 95% by weight of the total composition. In the case of a dental cream, such polishing agents will generally comprise from 20% to 75%, preferably 45% to 55%, whereas in tooth powders the polishing agents will usually be in greater proportion, such as from 70% to 95%.

[F— 7.]

In dental cream formulations, the liquids and solids are proportioned to form a creamy mass of desired consistency which is extrudible from a collapsible aluminium or lead tube. In general, the liquids in the dental cream will comprise chiefly water and/or a humectant or binder such as glycerine, sorbitol or propylene glycol, including mixtures thereof. The total liquid content will generally be from 20% to 75% preferably 40% to 50%, by weight of the formulation. It is preferred also to use in dental creams a gelling agent such as the natural and synthetic gums and gum-like materials, e.g. Irish moss, gum tragacanth, sodium carboxymethylcellulose, polyvinylpyrrolidone or starch, usually in an amount up to 10% and preferably from 0.5% to 5% of the formulation.

Various other adjuvant materials which do not substantially adversely affect the desired properties and characteristics may also be incorporated in the dental preparations. Typical of the adjuvants that may be used are soluble saccharin, flavouring oils (e.g. oils of spearmint, peppermint or wintergreen) colouring or whitening agents (e.g. titanium dioxide) preservatives (e.g. sodium benzoate) emulsifying agents, alcohol and menthol. Other suitable adjuvants are chlorophyllin and various ammoniated ingredients, such as urea, diammonium phosphate and mixtures thereof.

The following examples illustrate the invention. The compositions described are prepared in the usual manner as indicated, and all amounts of the various ingredients are by weight unless otherwise specified.

EXAMPLE 1 Dental Cream

	Per cent
Glycerine	23.95
Sodium carboxymethyl-cellulose (CMC)	0.75
Saccharin	0.20
Sodium benzoate	0.50
Water	15.59
Tetrasodium pyrophosphate	0.25
Dicalcium phosphate	46.75
Calcium carbonate	5.00
Sodium lauroyl sarcosinate (35% solution)	5.71
Flavour	0.80
Dodecyl dimethylamine oxide	0.50
Total	100.00

EXAMPLE 2

Dental Cream

A dental cream of the composition of Example 1 was prepared, but dodecyl dimethylamine oxide was replaced by cetyl dimethylamine oxide.

EXAMPLE 3

Dental Cream

A dental cream of the composition of Example 1 was prepared, but dodecyl dimethylamine oxide was replaced by a mixture of dodecyl and myristyl dimethylamine oxides. The distribution of the chain lengths of the alkyl groups in the mixture was approximately as follows: C₁₀—3.2%, C₁₂—54.9%, C₁₄—32.2%, C₁₆—9.2% and C₁₈—0.4%.

EXAMPLE 4

Dental Cream

	Per cent
Glycerine	26.00
Irish moss gum	1.40
Benzoic acid	1.00
Saccharin	0.20
Water	17.90
Hydrated alumina	50.00
Sodium lauroyl sarcosinate	2.00
Flavour	1.00
Decyl dimethylamine oxide	0.50
Total	100.00

EXAMPLE 5

Dental Cream

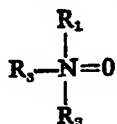
	Per cent
Glycerine	23.95
CMC	0.75
Saccharin	0.20
Sodium benzoate	0.50
Water	17.55
Dicalcium phosphate	47.00
Calcium carbonate	5.00
Sodium salt of hydrogenated coconut oil fatty acid monoglyceride monosulphonate	3.75
Flavour	0.80
Dodecyl dimethylamine oxide	0.50
Total	100.00

EXAMPLE 6			EXAMPLE 9		
Dental Cream			Dental Cream		
		Per cent		Per cent	
5	Glycerine	23.95	Glycerine	27.10	
	CMC	0.75	Irish moss gum	1.40	60
	Saccharin	0.20	Sodium benzoate	0.15	
	Sodium benzoate	0.50	Saccharin	0.20	
	Water	18.80	Water	22.15	
	Dicalcium phosphate	48.00	Insoluble sodium metaphosphate	40.60	
10	Calcium carbonate	5.00	Anhydrous dicalcium phosphate	5.00	65
	Sodium lauroyl sulphate	1.50	Titanium dioxide	0.40	
	Flavour	0.80	Sodium lauroyl sulphoacetate	1.50	
	Stearyl dimethylamine oxide	0.50	A mixture alkyl dimethylamine		
	Total	100.00	oxides in which the alkyl		
			groups consist of saturated		70
			straight chain hydrocarbon		
			radicals containing from 10		
15	EXAMPLE 7		to 18 carbon atoms in approxi-		
	Dental Cream		mately the following distri-		
		Per cent	butions: C ₁₀ —3.2%, C ₁₂ —		75
	Glycerine	27.10	54.9%, C ₁₄ —32.2%, C ₁₆ —		
	Irish moss gum	1.40	9.2% and C ₁₈ —0.4%	0.50	
20	Sodium benzoate	0.15	Flavour	1.00	
	Saccharin	0.20	Total	100.00	
	Water	22.15			
	Insoluble sodium metaphosphate	40.60			
	Anhydrous dicalcium phosphate	5.00			
25	Titanium dioxide	0.40	EXAMPLE 10		80
	Sodium lauroyl sulphate	1.50	Tooth Powder		
	Myristyl dimethylamine oxide	0.50		Per cent	
	Flavour	1.00	Sodium n-lauroyl sarcosinate	4	
	Total	100.00	Disodium acid pyrophosphate	2	
			Cetyl dimethylamine oxide	5	85
			Saccharin	0.1	
30	EXAMPLE 8		Flavour	2.5	
	Dental Cream		Dicalcium phosphate dihydrate	Balance	
		Per cent	The beneficial effects of the alkyl dimethyl-		
	Glycerine	27.10	amine oxide additives are realized at		90
	Irish moss gum	1.40	relatively low concentrations. Excellent re-		
35	Sodium benzoate	0.15	sults are generally obtained where the com-		
	Saccharin	0.20	pound is present in an amount ranging up to		
	Water	22.15	5.0% by weight of the dental preparation.		95
	Insoluble sodium metaphosphate	40.60	In the case of lozenges and tablets a con-		
	Anhydrous dicalcium phosphate	5.00	centration of 0.1% or lower may be em-		
40	Titanium dioxide	0.40	ployed.		
	The sodium salt of coconut oil		The anionic detergent ingredients pre-		
	fatty acid monoglyceride		ferred for use in the present compositions in-		
	monosulphonate	1.50	clude sodium lauroyl sarcosinate, Na H-coco		100
45	A mixture alkyl dimethyl amine		monoglyceride sulphate, i.e. the sodium salt		
	oxides in which the alkyl		of hydrogenated coconut oil fatty acid mono-		
	groups consist of saturated		glyceride monosulphate, sodium lauroyl sul-		
	straight chain hydrocarbon		phate and sodium coco-monoglyceride sul-		
	radicals containing from 10		phonate, i.e. the sodium salt of coconut oil		105
50	to 18 carbon atoms in approxi-		fatty acid monoglyceride monosulphonate.		
	mately the following distri-		Other anionic detergents which are con-		
	butions: C ₁₀ —3.2%, C ₁₂ —		ventionally incorporated in dental prepara-		
	54.9%, C ₁₄ —32.2%, C ₁₆ —		tions and in the presence of which the alkyl		110
	9.2% and C ₁₈ —0.4%	0.50	dimethylamine oxides function efficiently in-		
	Flavour	1.00	clude a combination of sodium lauroyl sar-		
55	Total	100.00	cosinate and sodium lauroyl sulphate, a com-		
			bination of Na H-coco-monoglyceride sul-		
			phate and sodium lauroyl sarcosinate, and		115
			sodium lauroyl sulphoacetate.		
			The anionic detergent compounds ordinarily		

are incorporated into dental preparations in amounts up to 5.0% by weight.

WHAT WE CLAIM IS:—

- 5 1. A dental preparation comprising a compatible mixture of a water-insoluble polishing agent, an anionic detergent and a compound having the general formula:



- 10 wherein R_1 and R_2 are methyl groups and R_3 is an alkyl radical having a carbon chain containing from 10 to 18 carbon atoms, the amount of the said compound being in the range 0.1 to 5% by weight of the preparation and sufficient to inhibit odour in saliva.

- 15 2. A dental preparation as claimed in Claim 1 in which the said compound is dodecyl dimethylamine oxide, cetyl dimethylamine oxide or myristyl dimethylamine oxide.

3. A dental preparation as claimed in Claim 1 in which the said compound is a mixture of myristyl dimethylamine oxide and dodecyl dimethylamine oxide. 20

4. A dental preparation as claimed in any of the preceding claims containing from 20% to 75% by weight of a mixture of water and a humectant, from 20% to 75% by weight of the polishing agent, and up to 5.0% by weight of the anionic detergent. 25

5. A dental preparation as claimed in Claim 4 wherein the humectant is glycerine. 30

6. A dental preparation as claimed in any of Claims 1 to 3 containing from 40% to 50% by weight of a mixture of water and glycerine, from 45% to 55% by weight of the polishing agent, and up to 5.0% by weight of the anionic detergent. 35

7. A dental preparation substantially as described in any of the Examples.

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Agents for the Applicants.